

In re Appln. of: Carl J. G. Evertsz
Appln. No.: 09/870,388
Attorney docket: 739-X01-004

REMARKS

Claims 1 to 16, originally in this case have been cancelled in favor of new claims 17 to 23. This constitutes a reduction in the number of claims, and the formulation of the claims in more precise and particular language, more exactly claiming the invention described in this specification. Applicant has made a serious and sincere effort to place the claims in suitable condition for allowance in view of the cited and applied art.

Applicant does not profess to be the first to conceive of a system and method for showing and analyzing medical images. This is concededly a well developed art. There are many known systems for showing medical images and analyzing them. What prompted the present invention is the over-burden of attempting to show and analyzing hundreds and thousands of such medical images during a screening activity, without the radiologist becoming either too tired or bored, and therefore making wrong diagnoses. Thus, the thrust of the invention is to provide a tool for the radiologist to become aware of his physical and mental condition, and to get feedback that will enable him/her to stop and rest, i.e. take a break and recharge attention required to make a good and valuable diagnosis during the rapid screening activity. The way this is accomplished is expressed in the limitations of the new claims, particularly claim 17, the main independent workstation claim.

According to claim 17, a radiological workstation is provided for in-service monitoring and training, quality assurance and quality control for screening of medical images. The workstation contains a computer having a user interface in which a user profile can be stored and a workflow memory in which a workflow in the form of a case stack can be stored including a pointer for pointing to the current case being reviewed. The computer further contains an image selection module coupled to the workflow memory containing a program, a pseudo-random number generator, a retrieval program module for retrieving image data from a first database, and an infiltration program module for retrieving image data from a second database. The computer also contains a session

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preparation module coupled to the image selection module for specifying data from the first database to be screened, for initializing the case stack, and for selecting and inputting data from the second database into the case stack including specifying an absolute number or percentage of known cases of different categories and/or subcategories to be input. The computer further contains a display module coupled to the image selection module for displaying a current image on a monitor, and a third database stored in memory, a first portion of which contains a user action database for tracing user actions that are input via the user interface, for recording rules, and for generating a user action report in accordance with the recorded rules, and a second portion of which contains a diagnosis database for recording diagnoses and/or annotations being input by a radiologist via the user interface. In addition to the computer, there is a first database comprised of a first image memory archive of cases to be reviewed, each case composed of a preselected plurality of images classifiable into preselected categories and subcategories, each case having a unique case identifier, said first database coupled to said retrieval program module of said image selection module of the computer. Further the workstation includes a second database comprised of a second image memory archive of known cases coupled to the infiltration program module of the computer, said known cases composed of a preselected plurality of images of known proven positive and/or known proven normal cases, within said plurality of preselected categories and subcategories, each said case having a unique case identifier; a monitor for displaying images coupled to the display module of the computer for displaying a current image; and a keypad coupled to the user interface of the computer, said keypad including a "next step key", which when actuated instructs the user interface to step to the next image or case. As a result of the structure and limitations recited in claim 17, a user via the session preparation module can preselect the operation of the radiological workstation for one of (1) training a radiologist using only known cases from the second database and (2) screening of real cases from the first database with a preselected number of known cases from the second database interspersed therein for monitoring and controlling a radiologist's attention.

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Whereas the cited prior art of Shile '482, Buckley '107, Nishikawa '322 and Leiper '022 relate in general to the art of showing medical images for the purpose of diagnosis, nevertheless, the cited art is rather of a general nature, and does recognize the need to provide the radiologist with a tool to become aware of his/her physical and mental condition, the lack of awareness of which could lead to missed diagnoses. The cited art particularly, does not disclose the claimed limitations nor teach or suggest the specifically claimed limitations for a workstation as recited in claim 17. Accordingly, the particularly recited limitations of claim 17 clearly distinguish from the cited and applied prior art, recite a worthy invention and are deserving of a patent. It is accordingly respectfully requested that claim 17 be held to be allowable.

Claims 18 to 21 are dependent on claim 17 and include all the limitations of claim 17. Therefore, these claims are patentable for the same reasons as claim 17.

Claim 22 is a method for creating a radiological workstation for providing in-service monitoring and training, quality assurance and quality control for screening of medical images comprising the steps

- (a) creating a user interface in which a user profile can be stored;
- (b) creating a workflow memory in which a workflow in the form of a case stack can be stored including a pointer for pointing to the current case being reviewed;
- (c) creating an image selection module coupled to the workflow memory containing a program, a pseudo-random number generator, a retrieval program module for retrieving image data from a first database, and an infiltration program module for retrieving image data from a second database;
- (d) creating a session preparation module coupled to the image selection module for specifying data from the first database to be screened, for initializing the case stack, and for selecting and inputting data from the second database into the case stack including specifying an absolute number or percentage of known cases of different categories and/or subcategories to be input;

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- (e) creating a display module coupled to the image selection module for displaying a current image on a monitor;
- (f) creating a third database stored in memory, a first portion of which contains a user action database for tracing user actions that are input via the user interface, for recording rules, and for generating a user action report in accordance with the recorded rules, and a second portion of which contains a diagnosis database for recording diagnoses and/or annotations being input by a radiologist via the user interface;
- (g) establishing a first database comprised of a first image memory archive of cases to be reviewed, each case composed of a preselected plurality of images classifiable into preselected categories and subcategories, each case having a unique case identifier, said first database coupled to said retrieval program module of said image selection module of the computer;
- (h) establishing a second database comprised of a second image memory archive of known cases coupled to the infiltration program module of the computer, said known cases composed of a preselected plurality of images of known proven positive and/or known proven normal cases, within said plurality of preselected categories and subcategories, each said case having a unique case identifier;
- (i) providing a monitor for displaying images coupled to the display module of the computer for displaying a current image; and
- (k) providing a keypad coupled to the user interface of the computer, said keypad including a "next step key", which when actuated instructs the user interface to step to the next image or case;

wherein a user via the session preparation module can preselect the operation of the radiological workstation for one of (1) training a radiologist using only known cases from the second database and (2) screening of real cases from the first database with a preselected number of known cases from the second database interspersed therein for monitoring and controlling a radiologist's attention.

The specifically recited combination of method steps recited in claim 22 cannot be found in the cited and applied art. The claimed limitations precisely define the invention as

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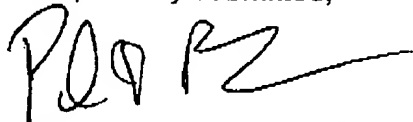
described above, and distinguish in a patentable manner. It is respectfully requested that the presently presented claims be considered allowable.

Claim 23 is directed to a computer program product stored on a computer usable medium, the computer program comprising program components for carrying out the method steps (a) through (f) of claim 22, when the program is run on a computer. This claim is patentable for the same reasons enumerated above.

In light of the foregoing remarks, this application should be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an Extension of Time, time sufficient, to effect a timely response, and shortages in this or other fees, be charged, or any overpayment in fees be credited, to the Deposit Account of the undersigned, Account No. 500601 (Docket no. 739-X01-004).

Respectfully submitted,



Martin Fleit, Reg. #16,900 by
Paul D. Bianco, Reg. #43,500

Martin Fleit
FLEIT KAIN GIBBONS GUTMAN BONGINI & BIANCO
21355 E. Dixie Highway, Suite 115
Miami, Florida 33180
Tel: 305-830-2600
Fax: 305-830-2605
e-mail: MFleit@FocusOnIP.com